SCIENTIFIC SERIALS

Mind, July.—This number has very little of interest for the general reader. Helmholtz, on the origin and meaning of geometrical axioms, maintains that geometrical axioms, in the form in which it may be maintained that they are not derived from experience, represent no relations of real things, that they have real import only when certain principles of mechanics are conjoined with them, and that then they are amenable to experience, and may be matters of inference.—Prof. Flint makes a clever fight for the non-derivative origin of moral ideas. He is very hard on the associationist philosophers. The laws of association, he says, will not explain how virtue, if at first loved merely as a means to happiness, comes subsequently to be loved for its own sake, apart from happiness. He denies that transformations of this kind are ever performed, and tries to show that in the case of avarice, the typical instance of the associationists, there is no such thing as the love of money for its own sake.—Mr. Pollock attempts to show, in reply to Mr. Sidgwick, that the doctrine of evolution is not quite without ethical value. He doubts whether the problem of the ultimate sanction of ethics in individual thought can strictly be deemed even rational. This is rather sad from our moral philosophers; with theology it has always been rational and simple enough.—Under the title, "The Original Intention of Collective and Abstract Terms," Max Müller endeavours to make out that Mill in his definitions of mind and of matter lost himself among words, and only jumped out of the frying-pan into the fire.—Mr. Shadworth H. Hodgson concludes his papers on philosophy and science. He opposes to pure ontological speculations the psychological impossibility of ever transcending the duality of subject and object. He retains for philosophy, however, a region avowedly beyond science, the same supra-sensible that Lewes rejects.—Mr. Lindsay gives an appreciative account of the Philosophy of Hermann Lotze, whom we are called on to admire as taking account of the spiritual no less than of the mechanical side of the universe. The history of philosophy at Dublin is written by Mr. Monck.—Among the Critical Notices is a reply by Prof. Bain to the arguments by which Mr. Alexander tries, in his "Moral Causation," to establish the doctrine of human freedom. Prof. Bain is exactly in his element, and the argument is exquisitely neat.—In each of the three numbers of *Mind* there have been notes on a question between Mr. Lewes and Prof. Bain, as to the warrant for our belief in the uniformity of nature, which show how difficult it is for philosophers to make themselves understood by one another.

Poggendorff's Annalen der Physik und Chemie, No 4, 1876.—In this number we find the second part of M. Winkelmann's memoir on heat conduction in gases; treating chiefly the subject of the relation of heat-conduction to temperature. The experiments were made with three apparatuses of different dimensions, consisting essentially of a spherical glass vessel with the bulb of a thermometer at the centre. The vessel could be filled with the gas to be examined; it was then placed in melting ice, boiling water, &c., and the time of cooling was observed. The theories of Clausius and Maxwell differ in the law they assign for variation of heat-conduction with the temperature. According to Clausius, the conduction increases proportionally to the square-root of the absolute temperature; according to Maxwell, proportionally to the temperature itself. The experiments of M. Winkelmann so far favour Maxwell's view of the law (though he does not regard them as confirming Maxwell's theory, in which the hypothesis of a repulsive force between the molecules acting proportionally to the fifth power of the distance, does not agree with experience, Thomson and Joule having shown that attractive, and not repulsive forces, act between the molecules). If the heat-conduction of air or hydrogen at 0° be made equal to 1, then at 100° it is equal to 1·364. The co-efficient for carbonic acid is considerably greater; the conduction at 100° (that at 0° being = 1) is 1·593; but it is less than the theoretical value (1·691), the variation of the specific heat of this gas with temperature being taken into account. M. Winkelmann further points out that the temperature co-efficient of friction of gases does not agree with that of the heat conduction.—In a contribution to the theory of the galvanometer, by M. Weber, will be found some useful directions in construction. Among other things he shows that galvanometers with "current-curve" of the form of two parallel lines connected by semicircles will, with only about a tenth expenditure of wire, show one-third greater sensibility than corresponding galvanometers with circular current curve.—M. Neesen offers an explanation of elastic reaction based on views furnished by the mechanical theory of heat as to the constitution of bodies.—M. Holtz describes a good apparatus for rendering visible the duration of the retarded discharge through rotation of the place of passage of the spark. It is only for sparks of long duration, and is meant in some sort as supplementary to the Wheatstone mirror arrangement as improved by Feddersen. The objections to which that apparatus is open, that it involves a weakening of the already weak light of the short discharges for which it is used, and that the extent of air to be broken through by the discharge is not invariable, here fall away.—In a new form of tuning-fork described by Dr. König the arms are penetrated by canals, which are connected below, and mercury is pressed up in them to any required height, from a neighbouring reservoir of the liquid; thus the tone is varied. The arms are excited by electrical means, as mere drawing of the bow would give sounds of too short duration.—Among other apparatus described are models of inclined planes, and an arrangement for illustrating the laws of parallelogram of forces.—M. Klein, from the Mineralogical Museum at Kiel, makes some contributions to a knowledge of gypsum.

Memoria della Società degli Spettroscopisti Italiani, January, 1876.—Statistics of solar eruptions in 1871, by Prof. Tacchini. It appears from these statistics that the number of eruptions on the western limb was double that on the eastern, the numbers being 66 and 31 respectively, observed on 122 days. The number on the southern hemisphere was one-third less than that on the northern, and the zone on which the most eruptions occurred is between 70° and 80° N.P.D., one only was seen north of 30° N.P.D.—Notes on spectroscopic observations in 1875, by Prof. Bredichin.—Researches on electro-static induction, by G. Pisati.—Researches on magnetism, by G. Pisati and S. Secchiloni.

February.—Daily notes of spots and faculæ near the limb of the sun, observed spectroscopically and directly, commencing February, 1874, by Prof. Tacchini. The reversal of the lines b, b^1, b^2, b^3, 1474, 4923, and 5017 appears frequent. The same observer gives the positions on the limb of the sun at which magnesium was seen from March to June, 1874.

March.—On the direction in space of the tail of Coggia's comet, by Prof. G. Lorenzoni. Tables accompany the paper, showing co-ordinates for the period from May 18 to July 14, 1874.—Prof. Schiaparelli gives a table of dates for 1876 and 1877, on which falling stars should be looked for. Table of solar spots observed in February and March last at Palermo. Statistics of solar eruptions observed in 1874. It appears that the number of eruptions on the western limb were three times that on the eastern, the number on the north being about one-fourth greater than those on the south.

April.—On the influence of eosin on the photographic action of the solar spectrum upon the bromide and bromo-iodide of silver, by Capt. Waterhouse. The watery solution of eosin gives by absorption two bands at about E and F, the alcoholic solution gives the bands rather nearer the red end of the spectrum. The action of this substance when added to the bromised collodion, or when a watery solution is poured over the sensitive plate, is to give greater sensibility to the plate for the green rays than to the blue, indigo, or violet, the maximum action being below E, extending to about half way to D. Ordinary wet collodion plates prepared with bromo-iodised collodion containing eosin prolongs the spectrum nearly to D.—Solar eruptions observed in 1872 by Tacchini, and spectroscopic observation on the sun in April, 1876.—The transparency of the air, by Prof. Ricco.

Zeitschrift der Oesterreichischen Gesellschaft für Meteorologie, April 1.—A paper lately appeared in this periodical, by Director Mohn, on the cause of the deeper barometrical depressions in winter than in summer, giving the author's reasons for having changed his opinion on the subject since the publication of his "Grundzügen der Meteorologie." In the present number we have a letter from Dr. Gustav Hellmann, upholding Herr Mohn's first explanation. Having shown how difference of barometric pressure depends upon difference of temperature and differences in the heights of the differing columns of air, and upon differences in humidity, and how these give rise to ascending currents, he states that the up-draught must be stronger in winter than in summer, because (1) the differences of temperature between two places are greater in winter than in summer, or the isotherms are nearer together; (2) decrease of temperature with height is half as great in winter as in summer; (3) the air is more saturated with moisture in winter. He lays stress upon

the fact that the barometer can only fall beyond the level due to the above-named differences when more air is carried away in the upper regions than comes in below. In this case the gradient is steeper at great altitudes than on the earth's surface, depending upon the strength of the up-draught, which is strongest in winter.—In the Kleinere Mittheilungen there is an article by Dr. Hann, on the cyclone of October 15, 1874, in Bengal, and one by Baron v. Friesenhof, on barometric maxima and minima in 1873 and 1874.

Nachrichten von der Königl. Gesellschaft der Wissenschaften, Göttingen, Nos. 22, 23, 24, 1875.—In these numbers will be found an account of some comparative experiments by M. Marmé, on the poisonous action of arsenious acid and of arsenic acid. Doses of the two acids containing equal amounts of arsenic (or with a little more in the arsenic acid dose), and diluted with water, were given to animals as similar as possible in age, weight, &c., being introduced directly into the circulation, or into the stomach, or the connective tissue. The symptoms are detailed. Without exception, the doses of arsenious acid proved more rapidly fatal than those of arsenic acid. The acid salts behaved similarly to the free acids. The fact is against Munck and Leyden's view, that arsenious acid in the blood is oxidised to arsenic acid, and that only as such it dissolves the blood-corpuscles, and causes fattening of various tissues and organs. The authors think it probable that when arsenic acid is introduced into the blood it is reduced to arsenious acid, and therefore its action appears more slowly. They further describe some experiments on the use of toxical substances to counteract arsenic acids.—M. Wöhler describes the properties of a fluorine mineral from Greenland, named "Pachnolith."—The remaining papers are mostly on chemical subjects, the principal one being by M. Hubner, on two nitro-salicylic acids and their employment in determining the nature of the hydrogen atoms in benzol.

SOCIETIES AND ACADEMIES

LONDON

Geological Society, June 21.—Prof. P. Martin Duncan, F.R.S., president, in the chair.—Mr. Hector Maclean and Mr. Samuel Trickett were elected Fellows, and Dr. L. Rütimeyer, of Basle, a Foreign Correspondent of the Society.—The following communications were read:—1. On the Ice-fjords of North Greenland and on the formation of fjords, lakes, and cirques in Norway and Greenland, by M. A. Helland. Communicated by Prof. A. C. Ramsay, F.R.S. The author described in great detail his observations on the glacial phenomena of Greenland, and applied their results to the consideration of the traces of glacial action exhibited in Norway. His view of the course of events in Norway is as follows:—Before the Glacial epoch thousands of streams commenced the work of erosion and produced valleys. During the Glacial epoch these valleys were enlarged and lake-basins were hollowed out. The descending glaciers ground out fjords to their full length when the Glacial epoch was at its highest, but as it declined the glaciers ground out the inner part to a still greater depth, producing the present characters of the marine fjords, and giving rise to lake-hollows in other places. That the glaciers once extended beyond the fjords is shown by moraine-matter being dredged up. Some of the sea-banks and islands off Christiania-fjord are old moraines; and if Norway should be raised 400 metres, these banks would show as moraines and plains before the lake-basins of the fjords. 2. On the drift of Brazil, by Mr. C. Lloyd Morgan. The author described the position and mode of occurrence of large boulders of gneiss and granite in the red drift of Brazil and on the slopes of hills even at considerable elevations, and stated that, like Prof. Agassiz, he could not see how these could have been transported to their present positions except by the agency of ice. He is inclined to believe that the drift, if of glacial origin, was not formed by glaciers taking their rise in any of the peaks indicated by him, but by an almost universal South-American ice-sheet.—3. Recent glacial and aqueous action in Canada and the drift-uplands of the Province of Ontario, by the Rev. Wm. Bleasdell. Communicated by the President. The author described the glacial action which takes place every winter in Canada, especially on the River St. Lawrence and its large lakes.—4. The glacial climate and the Polar ice-cap, by Joseph John Murphy. The author agrees with Mr. Croll in thinking that a Glacial epoch must be one of maximum eccentricity of the earth's orbit, and that the northern and southern hemispheres during such an epoch must be glaciated alternately; but he maintains in opposition to that writer that the glaciated hemisphere must have its *summer* in aphelion. He intends this paper to be a reply to Mr. Croll's objections to this theory as put forth in his work on "Climate and Time."—5. On the discovery of plants in the Lower Old Red Sandstone of the neighbourhood of Callander, by R. L. Jack and R. Etheridge, jun., of the Geological Survey of Scotland. The plant-remains are described as being of a very fragmentary nature. The authors discuss the relationships of these remains with other described Devonian forms, and regard them as most nearly allied to *Psilophyton princeps*, Dawson. They describe the plant with doubt as a species of *Psilophyton*.—6. On an adherent form of *Productus* and a small *Spiriferina* from the Lower Carboniferous Limestone Group of the East of Scotland, by R. Etheridge, jun., F.G.S., of the Geological Survey of Scotland. From the consideration of the characters presented by the more mature valves, the author stated that the nearest affinity of the species of *Productus* appears to be with *P. wrightii*, Dav., but that it shows peculiarities allying it to *P. longispinus*, Sow., *P. scabriculus*, Mart., and *P. undatus*, Defr. He was not prepared to describe it as a distinct species, but suggested for it the name of *Productus complectens*, in allusion to its embracing habit, in case of its proving to be distinct. The *Spiriferina* described by the author was compared by him with *S. cristata*, Schl., var. *octoplicata*, Sow., and with *S. insculpta*, Phill., from both of which it differs in certain characters; but as only one specimen has been met with, he refrained from founding a new species upon it. The specimen is from Fullarton Quarry, near Temple, Edinburghshire.—7. Notice of the occurrence of remains of a British fossil *Zeuglodon* (*Z. wanklyni*, Seeley) in the Barton Clay of the Hampshire coast, by Harry Govier Seeley, F.L.S. In this paper the author described the remains of a species of *Zeuglodon* obtained by the late Dr. A. Wanklyn from the Barton Cliff, consisting of a great part of the skull, about the same size as that of *Zeuglodon brachyspondylus*, Müller. The species, named *Z. wanklyni* in memory of its discoverer, differs from all known species of the genus in the shortness of the interspaces between the teeth.—8. On the remains of *Emys hordwellensis*, from the Lower Hordwell beds in the Hordwell Cliff, contained in the Woodwardian Museum of the University of Cambridge, by Harry Govier Seeley, F.L.S. The remains described by the author consist of some fragments constituting the greater part of the plastron and carapace of a species of *Emys*, for which he proposes for the species the name of *Emys hordwellensis*.—9. On an associated series of cervical and dorsal vertebræ of *Polyptychodon* from the Cambridge Upper Greensand in the Woodwardian Museum of the University of Cambridge, by Harry Govier Seeley, F.L.S. The author described in detail the structure of the atlas and axis and of the five succeeding (cervical) vertebræ; nine dorsal vertebræ were also described.—10. On *Crocodilus icenicus* (Seeley), a second and larger species of crocodile from the Cambridge Upper Greensand contained in the Woodwardian Museum of the University of Cambridge, by Harry Govier Seeley, F.L.S. 11. On *Macrurosaurus semnus* (Seeley), a long-tailed animal with procœlous vertebræ, from the Cambridge Upper Greensand, preserved in the Woodwardian Museum of the University of Cambridge, by Harry Govier Seeley, F.L.S., F.G.S.

(*To be continued.*)

Geologists' Association, July 7.—Mr. William Carruthers, F.R.S., president, in the chair.—Part ii. of the geology of Brighton, by Mr. Howell.—On the British Palæozoic Arcadæ, by J. Logan Lobley, F.G.S.—It was admitted that any classification of the Lamellibranchiate fossils of the Palæozoic rocks must be liable to considerable subsequent modification since the generic position of many species on account of imperfect preservation cannot be given with certainty. American palæontologists had added largely to our knowledge of Palæozoic Arcadæ, and the recent investigations of Mr. Hicks had extended the known stratigraphical range of this family as well as of the class Lamellibranchiata. The author, objected to the retention in Arcadæ of sinupallial genera, and proposed that these should constitute a new group, the *Ledidæ*. After eliminating several of the generic names which had been employed by authors, the genera allowed to stand were separately described, and the species by which they were represented in British Palæozoic rocks enumerated. The stratigraphical distribution of these species was shown by two tables, with which the paper concluded.

Entomological Society, July 5.—Prof. Westwood, president, in the chair.—Mr. Douglas exhibited some rare British